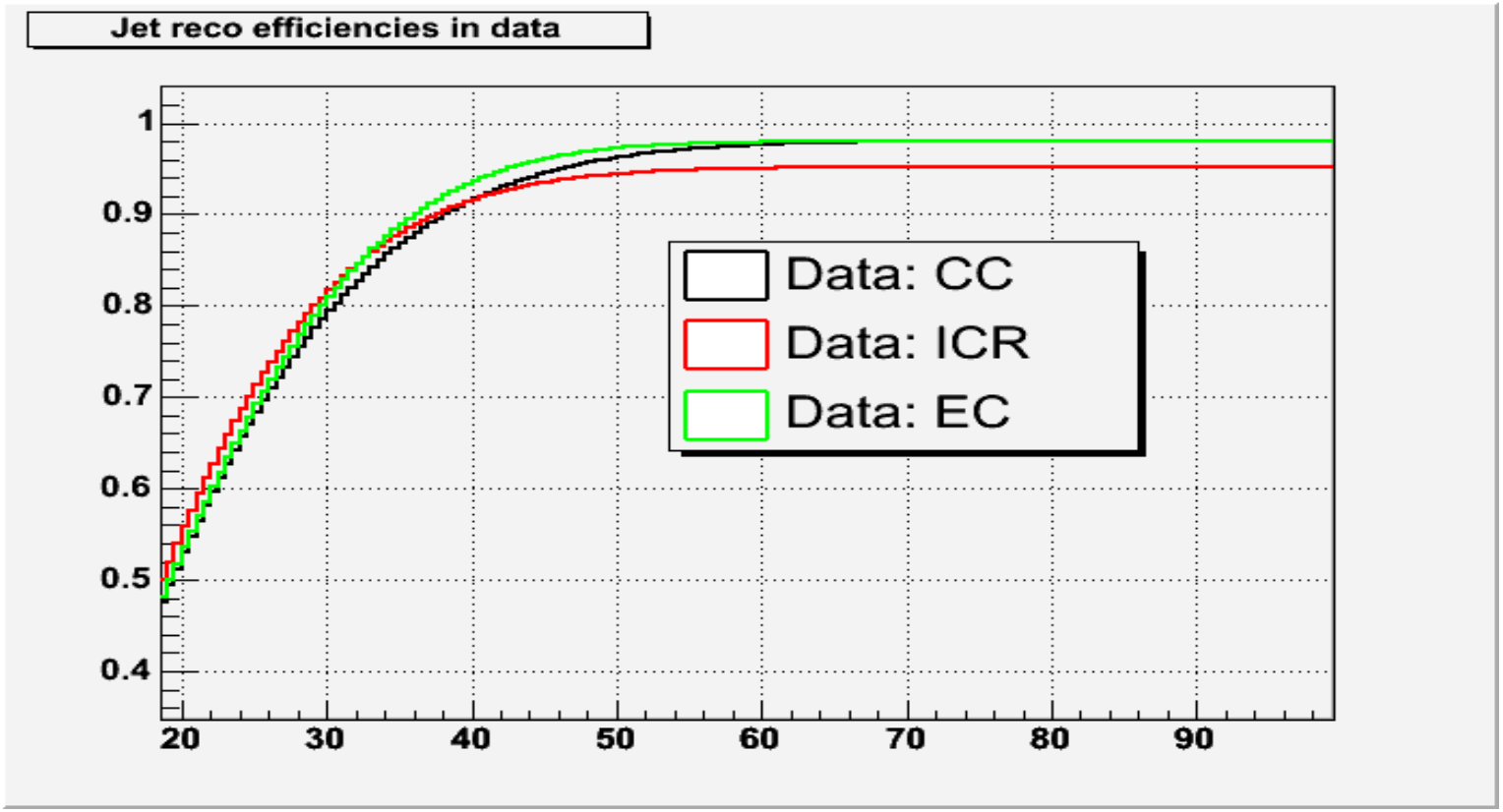
Unschmearing studies (2)

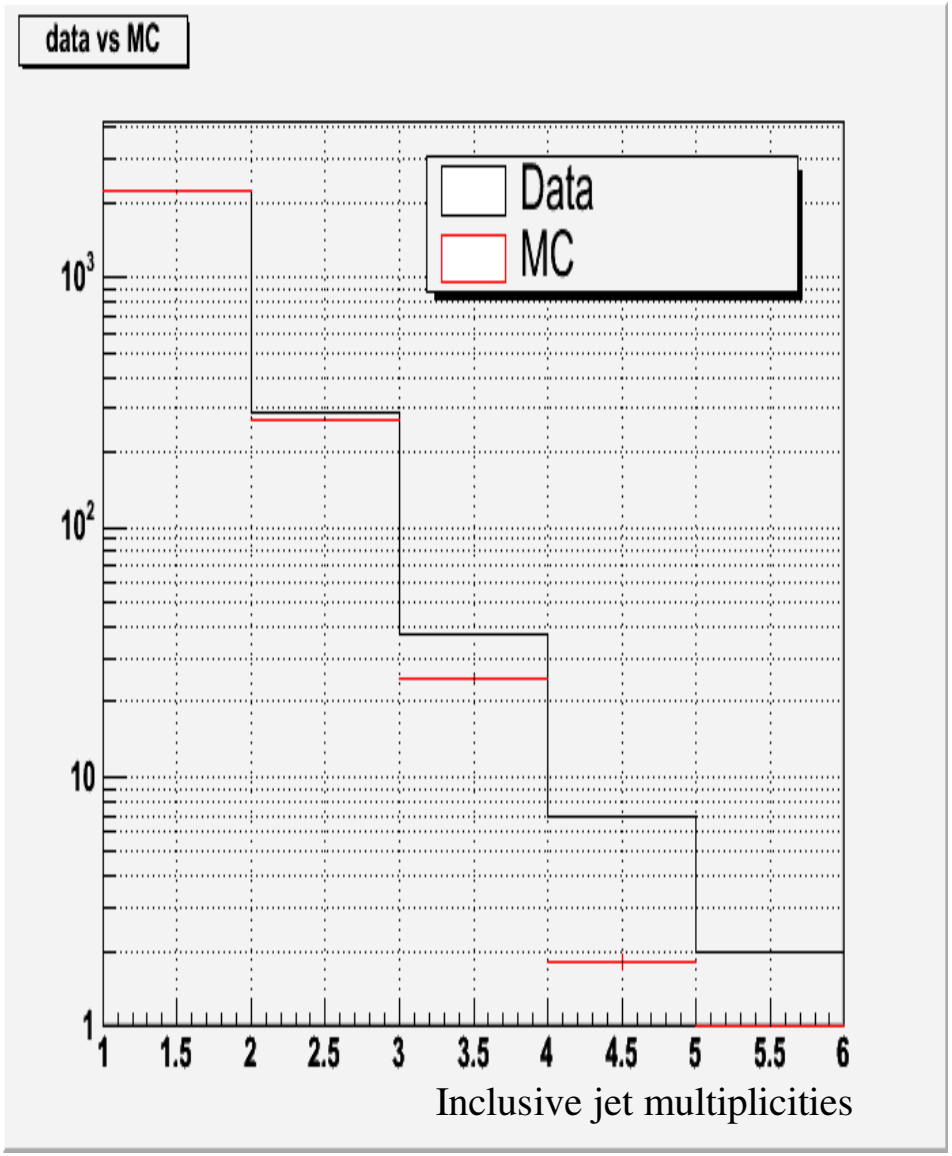
- Jet Sample 1: Particle level MC with data resolution and data jet reco efficiencies applied (w/o stable-parton-bug)
- Jet Sample 2: CAL level MC with JES 5.3, EM inefficiency-, Z pT - corrections applied (plus intrinsic MC resolution and jet reco efficiencies)
- Jet Sample 3: Data – corrected of EM inefficiencies, background subtracted (plus intrinsic data resolution and jet reco efficiencies)

James' jet reco efficiency parameterization:

p0 * Erf(p1 * pt + p2 * pt^(1/2) + p3 * pt^(1/4) (pt=datares smeared)

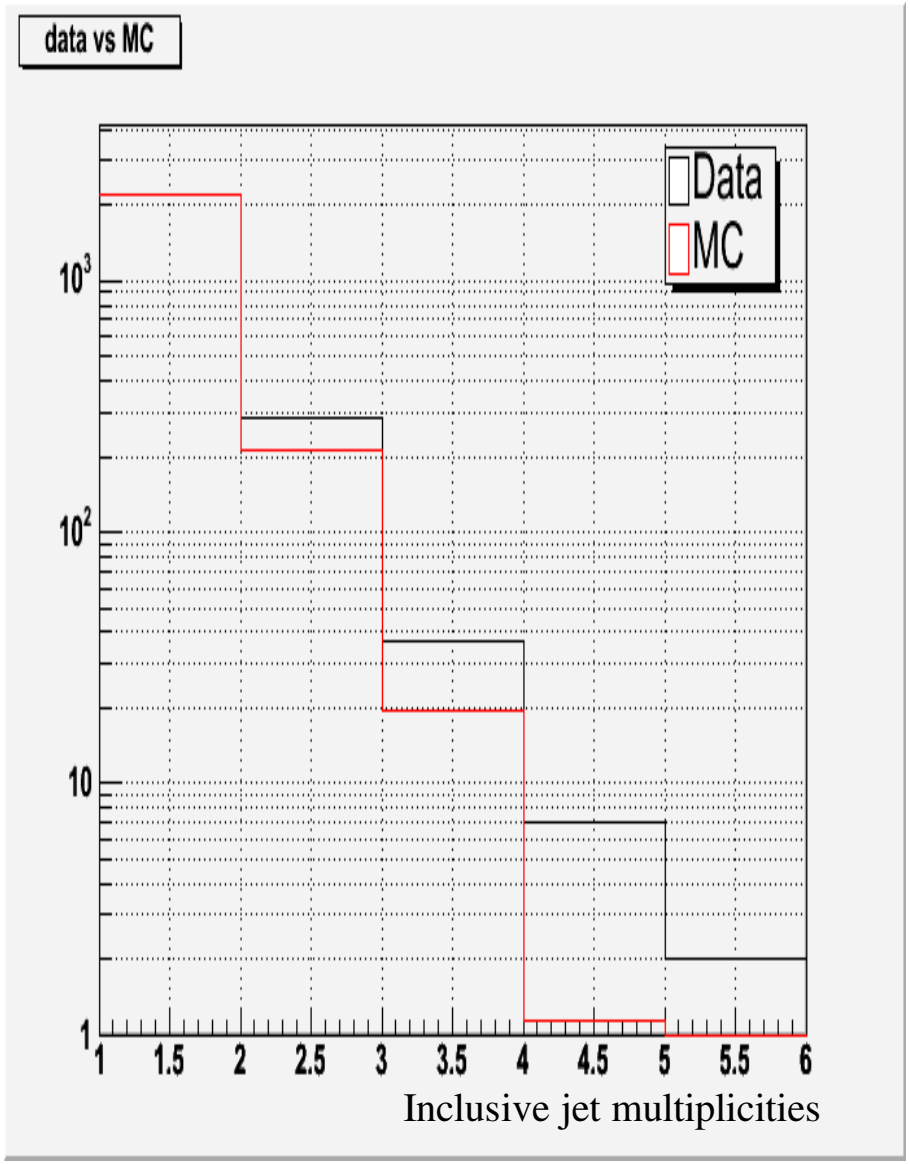
	p0	p1	p2	p3
data CC	0.981	1.623*10^-2	0.416	-0.786
data ICR	0.952	1.718*10^-2	0.503	-0.953
data FWD	0.980	6.088*10^-2	-0.193	8.284*10^-2





MC: Jet sample 1

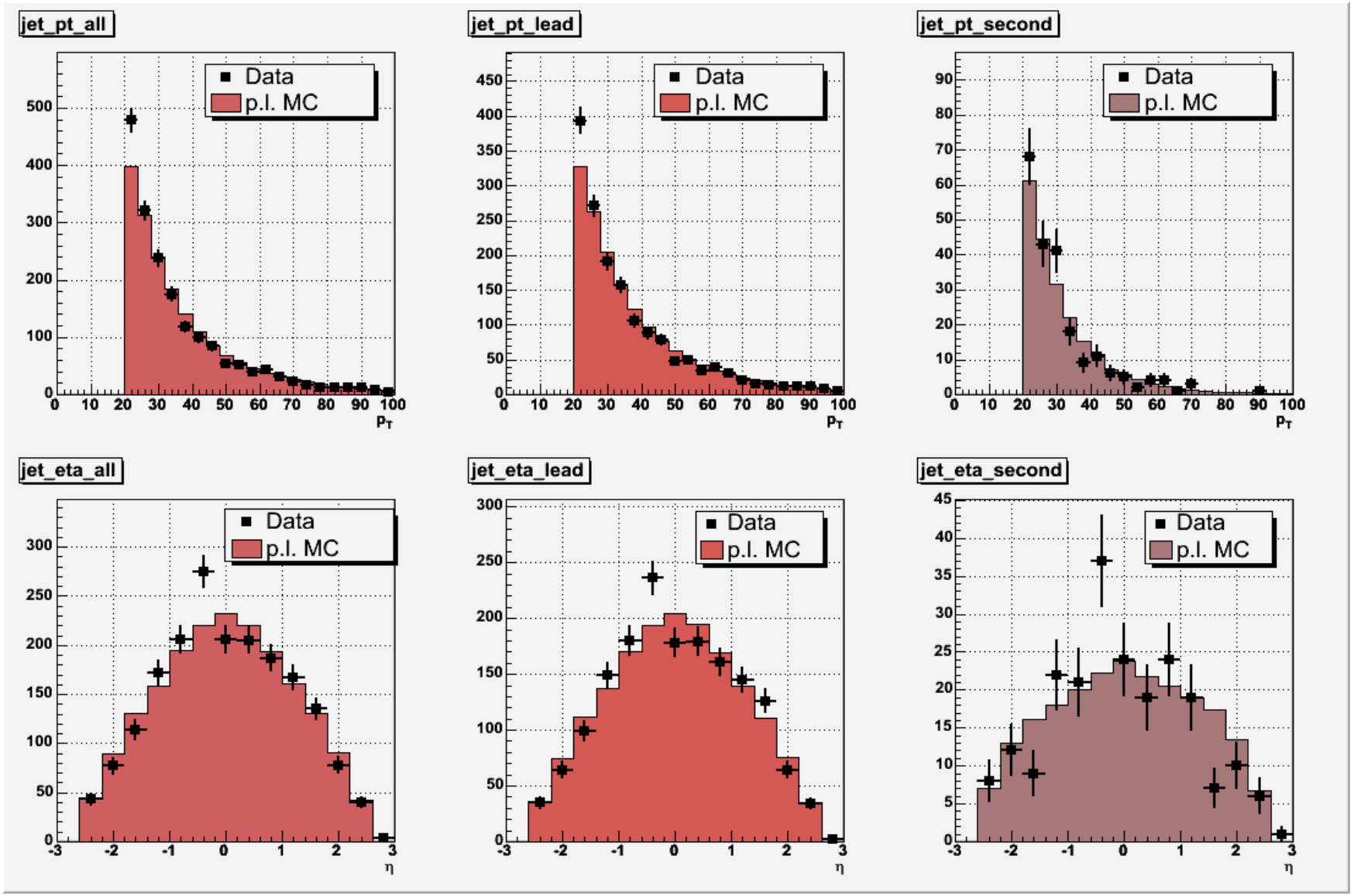
Data: Jet sample 3



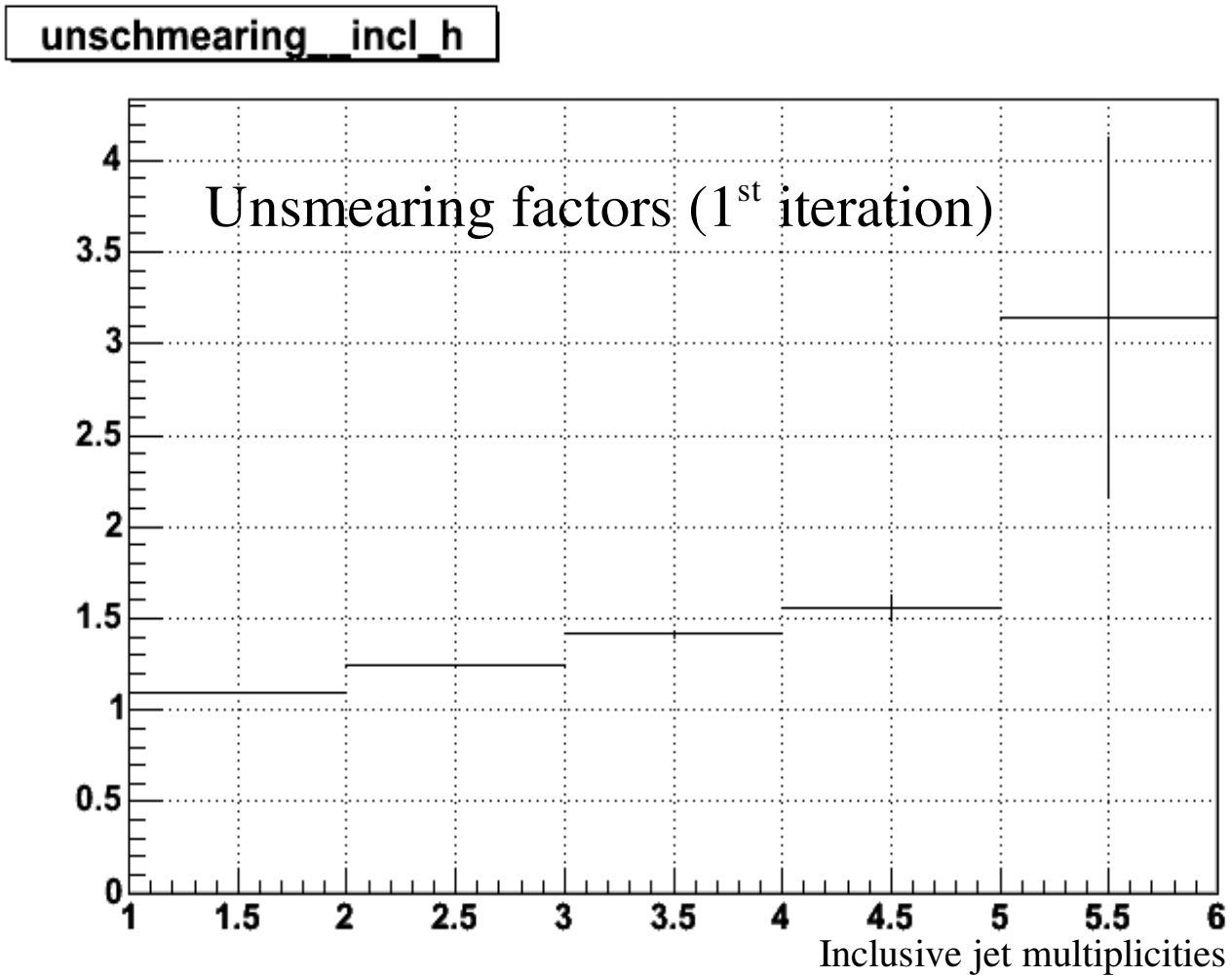
MC: Jet sample 2

Data: Jet sample 3

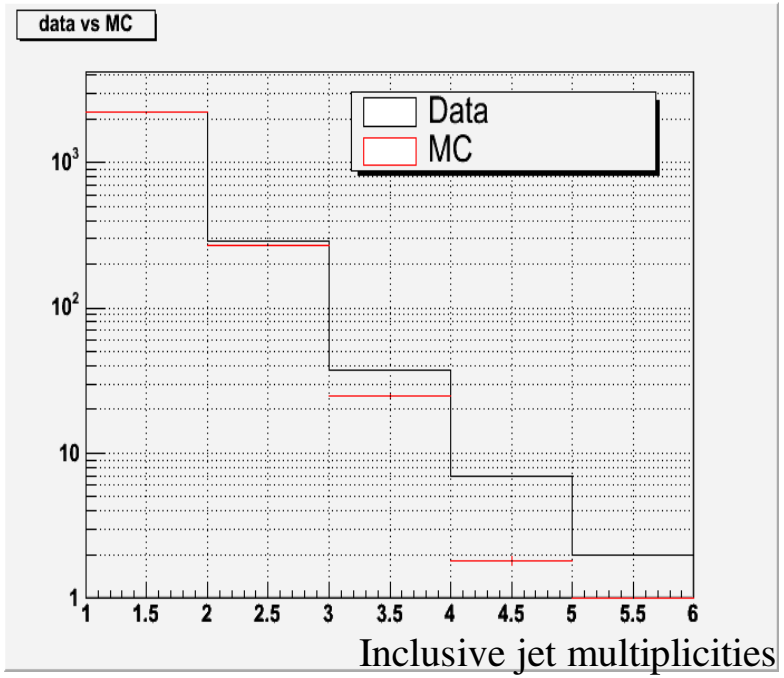
Comparing p.l. MC (smeared & jet reco applied) with data



$$\frac{\text{p.l. jet mult.}}{\text{smeared \& jet reco p.l. jet mult.}}$$



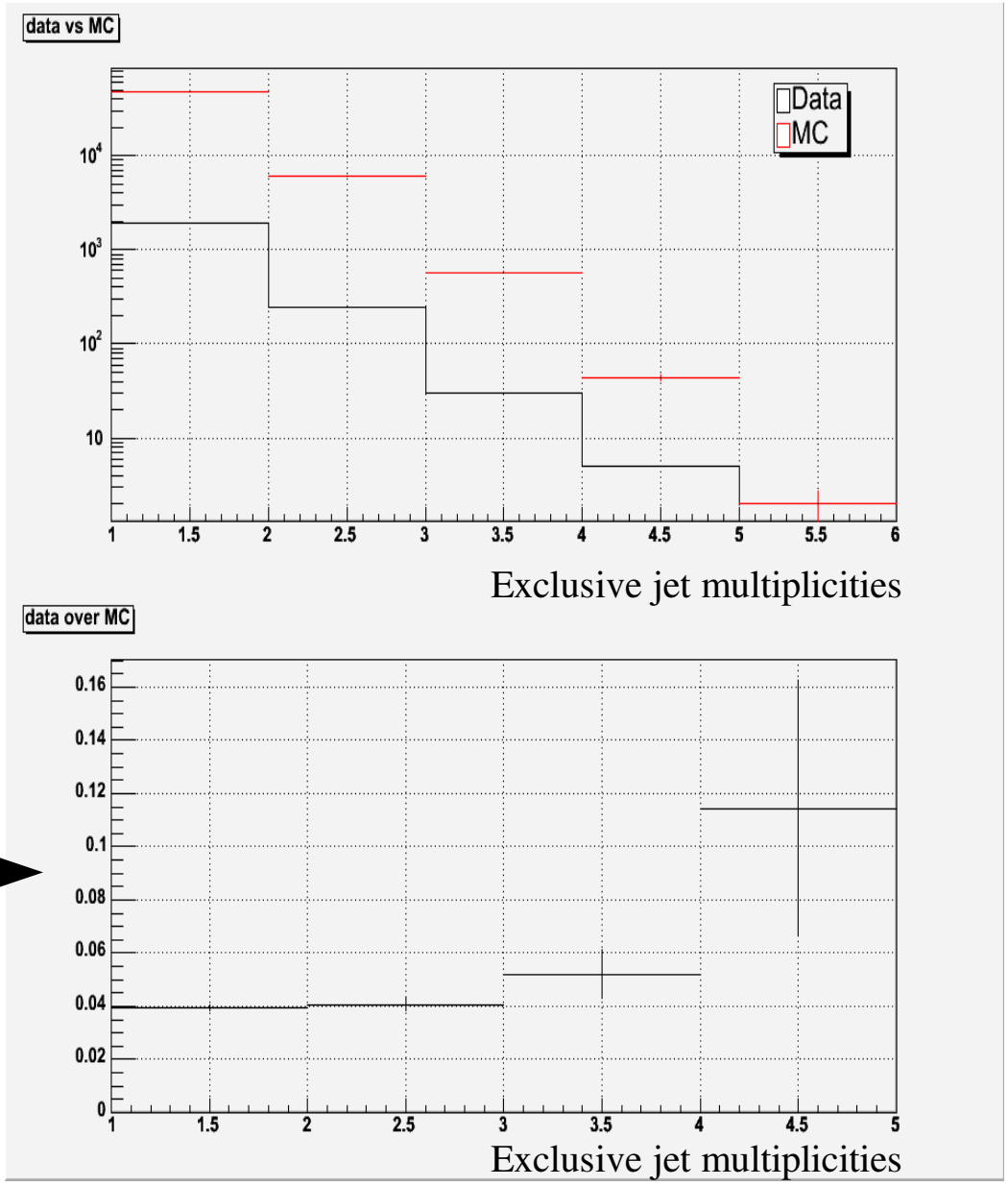
Now fixing 2nd order effects:
from looking at the plot on the left on slide 3 it is clear that there is a discrepancy between data and MC. We're trying to correct for this difference.



MC: Jet sample 1

Data: Jet sample 3

Step 1: overlaying data with smeared-jet-reco MC, normalized w.r.t. the last bin (#jets=5)



Step 2: taking the ratio of data over MC from Step1 to get multiplicity dependent correction factors:

#jets=1: 0.0395188

#jets=2: 0.0407034

#jets=3: 0.0521351

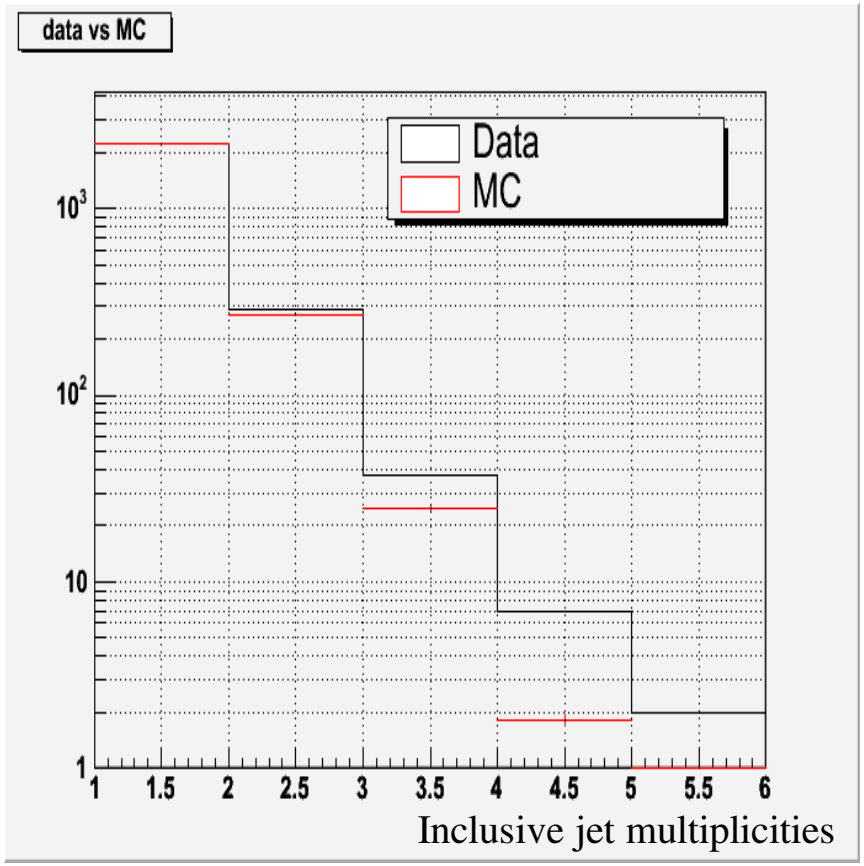
#jets=4: 0.114379

#jets=5: 1.0

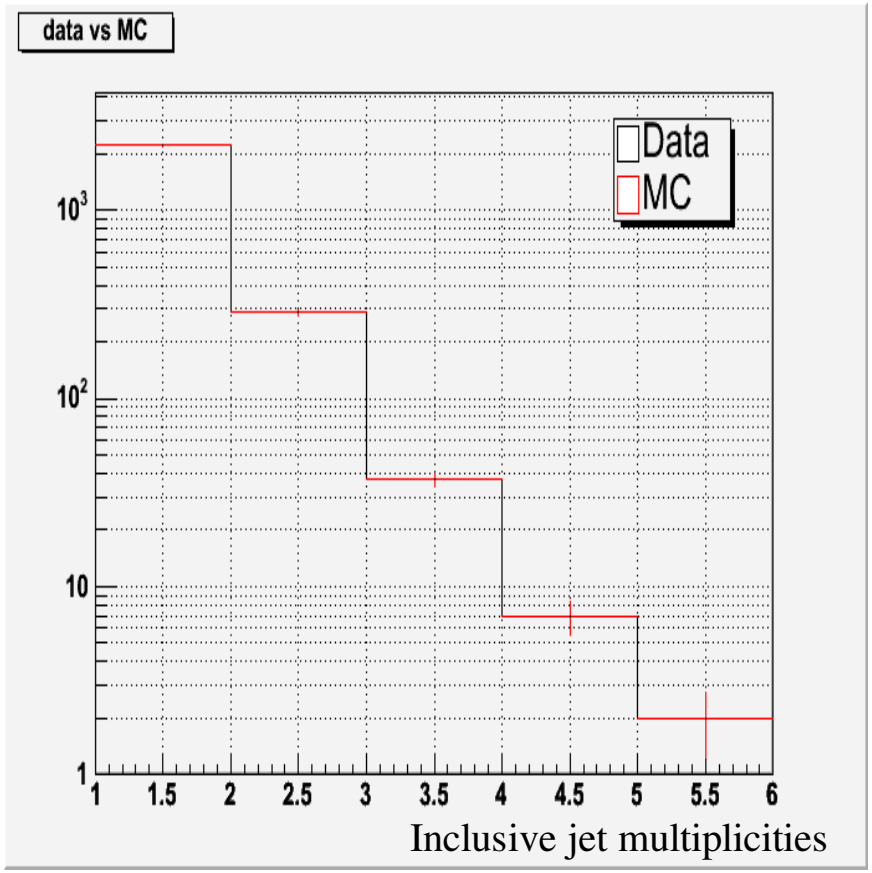
Step 3: re-doing the whole thing, this time applying the correction factors from the previous slide as weights.

Example: event xxx has 3 jets (unsmeared) and 2 jets (smeared-jet-reco).

the 2 jet weight (0.0521351) is used when filling both the unsmeared and smeared-jet-reco histogram.



before (1^{st} iteration)



after (2^{nd} iteration)